

before the end of the cooking process, and mixed thoroughly into the mixture to assure uniform dispersion.

Provision may have to be made to compensate for any losses of water soluble vitamins and other components experienced during processing. This is done, for example, by analysing the mixture of certain stages whilst processing and adjusting the amounts added for subsequent batches. There should, as in all processes of this nature, be constant monitoring of the raw materials and of the product at all stages to ensure purity, quality and conformity to specification.

After the cooking process, the mixture is subjected to further size reduction in order to process it into a homogeneous mass—the mixture tends to coagulate during the cooking process. This further size reduction is effected in a colloid mill such as a PUC Vikosator Type JV10. PUC Kolloidtechnik, Probst & Class GmbH, West Germany or an Urschel Comitrol machine etc. The temperature of the mixture at this stage is about 70°–80° C.

The mixture can at this stage be transferred to a holding vessel but the temperature of the mixture should be maintained at about 70°–80° C. and it should be stirred continuously prior to spraydrying.

The mixture then passes through a spraydrying process during which conditions are maintained so as to result in a dry product, containing the required nutrients and other product characteristics. In a pilot scale spraydrier with a Niro atomiser, the following conditions were found to be appropriate:

Air inlet temperature	180° C.
Air outlet temperature	80–85° C.
Mixture temperature in	60° C.
Product temperature out	48–52° C.
Solids content in	about 50%
Moisture content of product out	1–3%

The appropriate pump speed for feeding the mixture should be selected according to the requirements of the specific spraydrier to maintain the above conditions.

The product can then be packed appropriately for market needs, for example in hermetically sealed metal cans, containing a scoop to measure out amounts necessary to make up a liquid feed of the correct consistency and labelled according to recognised Health Regulations. The hypoallergenic (oligoantigenic) formula is preferably marketed in powder form. However, it may also be sold in ready-to-feed liquid form if processed to render it suitable for this aim, and packaged appropriately.

Samples made according to the above Example had very acceptable microbiological quality according to recognised Health Regulations. It is found that the formula specifically described will keep for at least 24 hours under normal refrigeration, exactly as would fresh cow's milk or any other similar nutritional formula.

Commercial production would require not only that the method as described in the Example be appropriately scaled up. To maintain the quality of the final product in industrial processing, the total processing time should be kept as short as possible, and no unnecessary delays should occur. If appropriate, delays may be lessened, by use of more than one of each of the pieces of equipment mentioned, so that time-overlaps may be utilised.

Whilst the Example is illustrative of the preparation of a very satisfactory hypoallergenic (oligoantigenic) formula which is nutritionally balanced, it is to be observed that variations in both the composition and method can be made within the scope of the invention as defined in the appended claims.

It has already been mentioned that other suitable hypoallergenic (oligoantigenic) muscle and/or meat may be substituted for all or part of the turkey breast meat.

Of equal importance to what the formula contains, of course, is what it does not contain. Clearly, all notorious allergens should be avoided, such, for example, as gluten and gluten products and wheat, which contains gluten, and its products, hens' eggs and products thereof, cows' milk and products, and soya protein. Goat's milk and its products should normally be avoided for feeds of infants under the age of 6 months. Sugars such as sucrose and lactose should be avoided in certain circumstances. Generally speaking, there should be no need to add colourants, preservatives and flavourings, whether natural or artificial, or stabilisers or emulsifiers, nor should there be a need to add free amino acids or peptides. While nothing is necessarily excluded, it probably is best to keep the list of ingredients as short as possible. Each added ingredient to which even a few infants may be allergic, or intolerant, will increase the overall allergenicity or intolerance of the product. Different infants may be allergic to different substances and so the allergenicity of the product may tend towards the sum of the allergenicities of its constituents, rather than remaining at that of its most allergenic component.

The hypoallergenic (oligoantigenic) nutritional formula of the invention may be used, specially formulated if necessary, to constitute a nutritionally balanced food for different ages or types of patient and for purposes other than infant feeding. Thus a formula may be a total or a supplementary feed, and may be used for all ages of patient with food allergy or intolerance and especially as the basis of a hypoallergenic or oligoantigenic diet.

The formula may be used in cases of colic; chronic diarrhoea; lactose intolerance; gluten sensitivity; fermentation diarrhoea; malabsorption of certain food constituents; malnutrition; and protein-calorie malnutrition such as kwashiorkor, marasmus etc, and galactosaemia.

It may be used for tube feeding and in geriatric cases.

This formula may also be used for patients with hyperactivity/hyperkinetic syndrome or migraine.

Other indications will no doubt occur to those familiar with this field.

I claim:

1. A method for making a hypoallergenic (oligoantigenic) nutritional formula comprising the steps:

- a) comminuting at least one of muscle and meat;
- b) adding at least one additive selected from the group consisting of lecithin, lipid, fat-soluble vitamins, minerals and carbohydrates prior to the completion of comminution;
- c) cooking the comminuted muscle meat mixture in water;
- d) adding at least one additive selected from the group consisting of water-soluble vitamins and fat-soluble vitamins, near the end of cooking;
- e) processing the cooked mass in a colloid mill;
- f) drying the cooked mass to a powder; and
- g) packaging the dried powder under a nitrogen flush.